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(54) Non-filament Lights

(57) A light source (1) wherein the source of illumination thereof is constituted by a plurality of Light Emitting Diodes as, and wherein all of the Light Emitting Diodes are totally encapsulated in light transmittable encapsulant (10) which serves additionally to provide physical protection against damage to the Light Emitting Diodes encapsulated thereby.

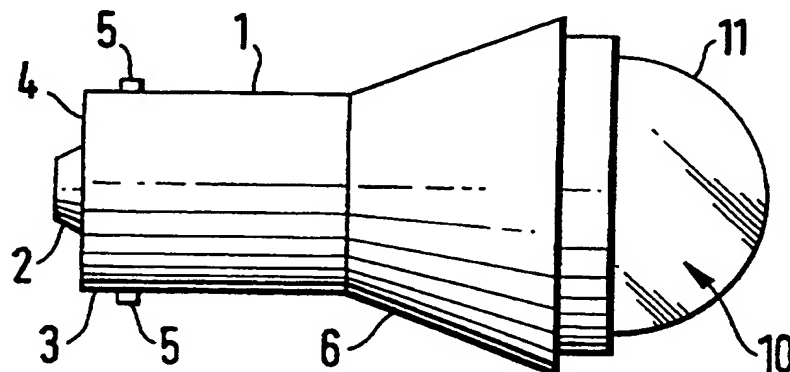


Fig. 1

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NON- FILAMENT LIGHTS

This invention relates to lights for illumination and/or other purposes such as signalling.

In particular, the present invention is concerned with a construction of a light source which is particularly
5 suitable for use as a motor vehicle light.

It is very well known that the source of light in existing motor vehicle lights and most other lamps/light sources is a coiled filament. It is also well known that this filament is very unreliable due to the ease by which it
10 fractures, for example, as a result of vibrations from a vehicle to which it is fitted.

It has also been proposed to make use of a form of illumination known as a Light Emitting Diode as a source of illumination.

15 In view of the relatively small size of the light producing area of the individual Light Emitting Diode it has been proposed to provide an array of Light Emitting Diodes. One such known proposal involves the use of a reflective circuit board upon which a plurality of
20 individual Light Emitting Diodes have been mounted, the board providing an electrical circuit to interconnect the Light Emitting Diodes so that they can be collectively or individually illuminated by a source of energy. In practice, the electrical circuit can comprise a printed
25 circuit board or be hard-wired and driven from a source of energy. In practice, the electrical circuit can comprise a printed circuit or a hard wired circuit arrangement.

to provide physical protection against damage to the Light Emitting Diodes encapsulated thereby.

Preferably, the Light Emitting Diodes are grouped to provide a predetermined array thereof with the individual
5 Light Emitting Diodes of the array electrically connected to a light source mounting arrangement providing positive and negative terminals, the arrangement being such as to provide a one piece construction which can be connected or removed from a complementary socket in the manner of a
10 conventional filament light bulb.

In a preferred construction connection element is in the form of a standard bayonet or a standard screw thread fitment.

Conveniently, the light source of the invention includes a
15 conventionally shaped and dimensioned cylindrical housing which is electrically conductive and serves as the negative terminal for the light electrical supply, therebeing a positive terminal for the electrical supply located at a first end of the housing, whilst the other
20 end of the housing terminates at an outwardly diverging conically flared shroud the interior of which provides a cavity for said array of Light Emitting Diodes and electrical connections.

Preferably, the encapsulating material whilst being
25 transmissive to light exhibits, any colour considered suitable for any particular application of the light source and light diffusion.

In a preferred construction the array of Light emitting Diodes comprises a flat formation.

whereby the positive terminal 2 is electrically insulated from the housing 1.

Conventionally dimensioned pins 5 project diametrically opposite one to the other from the housing 1 to provide
5 the bayonet locking action pins for the light source.

The other end of the housing 1 terminates at an outwardly diverging conically flared shroud 6, the interior of which provides a cavity 7 for an array 8 of Light Emitting Diodes 9 and various electrical conductors (not shown)
10 associated therewith for effecting electrical connections in what ever manner required to energise the Light Emitting Diodes 9 for what ever application the light source is intended to serve.

The individual Light Emitting Diodes 9 are totally
15 encapsulated by a encapsulating material 10 the outer surface 11 of which is can be of any convenient shape.

Preferably, the shape of the outer surface 11 is selected to give the best light refraction as to suit the intended application requirements both physical in shape and size
20 and visual in light intensity and spread.

The encapsulating material can be of a transparant material or any colour considered suitable for any particular application of the light source and light diffusion. The encapsulating material has two primary
25 functions the first to allow as much light as possible from the Light Emitting Diodes 9 to pass through the material and to act as a lens for focussing the light and the second is to provide physical protection against damage to the Light Emitting Diodes 9 encapsulated
30 thereby.

operated from almost any supply voltage (a.c. or d.c.)
once such supply voltage has been produced at the output
side of the associated electrical circuitry as, for
example, indicated in Figure 3. It will be understood
5 that the purpose and characteristics of the control
circuit would depend upon the application and any
associated electrical requirements for the light source.

5. A light source as claimed in any one of the preceding claims, and wherein the encapsulating material is a transparent material.
- 5- 6. A light source as claimed in any one of claims 1 to 4, and wherein the encapsulating material, whilst being transmissive to light, exhibits any colour considered suitable for any particular application of the light source and light diffusion requirement.
- 10 7. A light source as claimed in any one of the preceding claims, and wherein the array of Light Emitting Diodes comprises a flat formation.
8. A light source as claimed in any one of claims 1 to 7, and wherein the array is arranged to present a 'domed' or other non-flat formation.
- 15 9. A light source, constructed and arranged to operate substantially as hereinbefore described with reference to the accompanying drawings.

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